ART. XIV. *Theoretich-praktisches Hondbuch der Chirurgie, mit Einschluss der Syphilitischen und Augen-krankheiten; in alphabetischer ordnung.* Unter Mitwirkung eines Vereines von Aerzten und Wundärzten herausgegeben von Dr. JOHN NEP. RUST, Ritter des Königl. Preuss. rothen Adler-Ordens, Ritter, des eisernen Kreuzes und Kaiserl. Russ. St. Annen-Ordens Zweiter Klasse, &c. Professor der Heilkunde an der Friedcrich Wilhelms-Universitat, und an der Medicinisch-Chirurgischen Militair-Akademie, &c. &c. &c. Band. 1, 2, 3, 4 and 5. Von A. bis Detractis, mit dem bildnisse der Verfassers. Berlin und Wien, 1830–31. pp. 738, 784, 816, 760.

A Manuel of Theoretical and Practical Surgery, embracing the consideration of Syphilitic affections and Ophthalmology, arranged in alphabetical order. By Dr. JOHN NEP. RUST, Professor of Medicine in Frederick William's University, and in the Medico-Chirurgical Military Academy, &c. &c.; assisted by an association of Physicians and Surgeons. Vols. I. to V.—A to D. Berlin and Vienna, 1830 and 1831.

IN this country, where the invaluable Dictionary of Practical Surgery of Mr. SAMUEL COOPER is so well known and so highly appreciated, it cannot be necessary to point out the immense advantages that are likely to accrue from a work of the character of that which we have announced at the head of this article. Whatever objections may be urged against the Cyclopædaic form, when applied to elementary treatises on the different departments of the sciences, it must nevertheless be admitted, that it possesses an advantage over all others, by admitting the collection, into a small compass, of a greater quantity of important information, than could be conveniently embodied under any other form. Such a plan is particularly advantageous, when the several articles are made to constitute complete monographs, in which are condensed the sum of our information on the subject of which they treat, drawn up with care, and by individuals justly entitled to confidence. The present undertaking, therefore, bearing as it does the name of Rust, an individual already extensively known as one of the most distinguished of modern surgeons, aided by collaborators of established reputation, cannot but be hailed by the votaries of surgical science, as furnishing an important acquisition to their sources of instruction. Of the proposed extent of the work in question we can form no accurate opinion, as we have as yet only received five volumes; but judging from the small portion of the alphabet which is comprised within that compass, there is every reason to infer that the plan of the author is

intended to embrace a wide range, and to include every thing of interest appertaining to surgical science.

In our review of the volumes which are before us, we shall be obliged to restrict our attention to a few of the leading articles which they contain, as an examination of the entire range of subjects would require much more space than can be appropriated to their consideration.

The articles devoted to the consideration of extirpation of enlarged tonsils, of the uvula, and the tongue, furnish a good exposition of the rules that should be observed in the performance of those operations, and of the cases in which they should be resorted to. In the extirpation of the tonsils and tongue, the operation by the knife, or scissors, is recommended in preference to that by ligature, and with good reasons in its favour. Although the operation may be executed with perfect safety by the latter process, it is almost always attended with pain and much inconvenience, and it not unfrequently happens, that several days elapse before the part which has been included in the ligature drops off, during which time the individual is distressed beyond conception by enormous swelling of the tongue and fauces, profuse salivation, difficulty of respiration and deglutition, and sometimes with inability to sleep, or remain even in a recumbent posture. We once attempted to remove a large tumour from near the root of the tongue by this operation, and although its base, which was broad and solid, was transfixed by a needle and double ligature, and the latter drawn firmly round it on each side, we were eventually obliged, after our patient had been submitted to extreme suffering of three days continuance from the above symptoms, to complete the operation with the scissors. No hæmorrhage of consequence ensued; the inflammation and salivation quickly subsided; and at the end of a week the individual returned home perfectly well. We conceive, indeed, that the danger of hæmorrhage, from the employment of the knife, has been greatly exaggerated; but be that as it may, we would rather hazard its occurrence, and trust to the ligature and cautery for arresting it, than to submit the patient to the inconvenience and suffering which are apt to arise from the ligature. Should those means not be found adequate, the author recommends to secure the lingual artery where it courses along the cornua of the os hyoides.

Abscesses, *Apostema, (die Eiterbeule, der Abscess.)*—The subject of abscess is one of great importance to the pathologist and surgeon, and is ably discussed in the article devoted to its consideration.

"An abscess," says the author, "is a manifest cavity, formed in some part of the organic tissues, containing pus or an analogous pathological fluid, which its walls continue to secrete until the cavity is obliterated." Band. I. p. 54.

Every abscess therefore, whatever its situation, he very correctly represents as a temporary secreting organ, elaborating a peculiar animal fluid, which is incapable of contributing any plastic materials to the organism, and is therefore thrown off as extraneous matter. The fluid contained within an abscess presents considerable diversity of character, according as it is developed in the skin, the glands, the lungs, brain, &c.; and, moreover, exhibits different grades, when considered in relation to its vital properties and its affinities with blood, from the condition which constitutes healthy or laudable pus, down to a mere lymphatic fluid or sanies. Notwithstanding the careful researches of Hunter, Darwin, Salmuth, Grasmeyer, Brugmanns, Home and others, no certain criterion has yet been furnished, by which this fluid can be accurately distinguished, nor are we indeed likely to acquire one, as has been correctly remarked by Walther, which can be relied on as perfectly characteristic, so that in practice, the only points of importance to be observed are, its various degrees of coagulability, the presence or absence of its globules, the nature of the flocculi which are commingled with it, together with the influence it exercises on the living organism. Good healthy pus is that which possesses the strongest affinity with the properties of the blood, and, consequently, that which is best adapted, by its plastic qualities, to contribute to the restorative process; that on the contrary, which is thin and sanious, instead of facilitating the acts of restoration, generally tends to hasten the work of destruction, and is therefore regarded as unhealthy. There are a great variety of circumstances which tend to impart to the contents of an abscess these latter properties; as for example, a feeble or unhealthy form of inflammation; the long retention of the matter after it has been formed, by which its properties become modified; the condition of the organism by which it is elaborated; the influence of the scrofulous or venereal diathesis, and numerous other conditions which have a tendency to prevent the secretory process, by which the pus is separated from the blood. p. 56.

The successive changes attending the development of an abscess, and the condition presented by the cavity after it is formed, as well as the different acts by which it is obliterated, are very well described by the author.

"The pathological secretory process, by which an abscess is developed, should be considered as consisting in some modification of the plastic acts of the part excited, in most cases, by a degree of inflammation more or less intense, which, however, is sometimes not revealed by any external manifestations, and is perhaps, in some instances, entirely wanting. In the latter case,

it is probable that the system is, as represented by Walther,* affected with a genuine *purulent diathesis*, in virtue of which the pus is elaborated in the blood-vessels themselves."

While we concur fully in the leading points of this explanation, we are not disposed to yield our assent to the assumption, that an abscess may be formed without preëxisting inflammation. We are satisfied, on the contrary, that that act, in all cases, constitutes an indispensable antecedent condition, though we are ready to admit, that large deposits of matter are occasionally made in parts, in which no inflammation preceded; yet that matter must, in the first place, have derived its origin from the changes induced by inflammation in some remote part. This is exemplified in what are called abscesses by congestion, in which the pus frequently travels some distance in the interstices of the tissue, previously to arriving at its point of accumulation. We are equally averse to admit the existence of the purulent diathesis of Walther, although a similar hypothesis has been espoused by respectable pathologists. The molecular modifications which the blood undergoes in the formation of pus, take place in the situation of the inflammation itself; are the result of influences impressed upon that fluid by the inordinately excited solids with which it is then in relation, and never occur in remote situations, while the blood is moving quietly in its ordinary circuitous round, and uninfluenced by inflammatory action.

"If the anatomical characters of an abscess be examined, before the full development of the suppurative process, the middle of the tumefaction will be found distended with an inordinate quantity of blood, injected into the interstices of the cellular tissue, interspersed with which we shall observe a few points of purulent matter, the number of which are hourly increased. This fact, which has been fully established by the researches of Beclard, Prevost, and Dumas, Vacca, Allan, Wilson Philip, Laennec, and Gendrin, demonstrates, on the one hand, that the development of the cavity of the abscess is owing almost exclusively to a distention and forcing asunder of the fibres and laminæ of the cellular tissue, by the accumulation of the fluid, and on the other, shows the intimate relationship between the blood and the purulent matter, and the facility with which the one is transformed into the other." p. 56.

These changes are well exemplified in those abscesses which form in transparent parts. They are at first almost entirely filled by blood; the quantity of pus, however, increases progressively, and in proportion as it becomes more abundant, the blood disappears, unless, as is sometimes the case, the intensity of the inflammation continues such as to keep up great determination of blood, or becomes greatly exas-

* Abhandlungen aus dem gebiete der Prakt. Med. Landshut, 1810.

perated during the progress of the disease, so as to precipitate, as it were, a new influx upon the diseased point. Under such circumstances, we find the contents of the abscess commingled with a large proportion of blood throughout every period of the disease, or if they have already become purulent, the new attack of inflammation will again impart to them the bloody character.

"The contents of abscesses are, with only a few exceptions, surrounded by a delicate membranous cyst, which lines the parieties of the cavity. This membrane is particularly manifest in acute abscesses, is seldom wanting in those of a chronic character, and is very well developed in large lumbar abscesses, as has been well shown by the investigations of Bichat, Richerand, Villermé, Beclard, Langenbeck, Cooper, Gendrin and others. The frequent occurrence of this character induced Sauvages to designate those abscesses, in which it exists, cystis purulenta. Where the cyst is wanting, its development is generally prevented by an inordinate depression of the powers of life, as in the gangrenous and pseudo-erysipelatous abscess, or by a too rapid diffusion of the purulent matter beneath the aponeuroses and tendinous expansions." p. 57.

This membranous sac consists, at first, of a simple deposite of coagulable lymph, which, as it becomes solid, exhibits a delicate flocculent aspect. In proportion, however, as the process of organization advances, this coagulable lymph assumes more and more of the character of a pseudo-membrane, and finally becomes a complete membranous cyst, or investure, by which the matter of the abscess is circumscribed, and prevented from being diffused throughout the adjoining cellular tissue. Our author supposes that this cyst is formed in part by the plastic powers of the pus itself, and in part by the reaction of the adjacent cellular tissue and other structures, the plastic powers of which are exalted, to throw off the pus or the contents of the abscess, which acts upon them in the same manner as a foreign substance. This is doubtless true, as a general rule, but it is unquestionably equally true, that in many cases the pus possesses no such plastic properties, and it necessarily follows, that in such instances the whole of the process must be accomplished by the acts of the adjacent capillaries, and the tissues which they permeate. But be this as it may, it is stated by our author, that the membranous envelope in question generally retains a character of great delicacy, while it is completely excluded from the contact of atmospheric air, but when exposed for a length of time to that influence, it becomes red, more vascular, is increased in thickness, and often assumes the consistence of fibro-cartilage. This is seen in the membranous cysts which are found lining tuberculous excavations in the lungs, especially when they are contrasted with those which line a common abscess, yet we

have seen some cases of chronic abscess of very long standing which have exhibited a membranous lining possessing all the properties adverted to, although the atmosphere has had no access to them. But whatever may be the extent of the modifying influence of such causes, certain it is, that this membrane possesses, not only an important agency in the development of the abscess, but also in its removal; for performing, as it does, the double office of secretion and absorption, and being at the same time possessed of a considerable degree of contractility, whenever the activity of its recurrent function is diminished, while its faculty of absorption remains unchanged, or is augmented, the resistance being in part overcome by the diminution of its distention, it contracts upon its contents; the capacity of the abscess is gradually diminished, and is eventually entirely obliterated by a cohesion between its parietes.

We shall pass over the observations of the author relative to the diagnosis of abscesses, to notice the different varieties into which he divides them. These divisions are founded principally upon the causes by which they are induced, their tendency to heal, the different states of the organism under which they are developed, and their situation.

Under the first head we have those which are called idiopathic, or which arise from the simple acts of the organism under the influence of common causes; as, for example, common inflammation, the irritating influence of chemical and mechanical irritants, &c. and those which are designated sympathetic, and which are dependent upon constitutional causes. These are subdivided by the author into constitutional, rheumatic, syphilitic, and abscesses by congestion. *(A. constitutionalis, A. rheumaticus, A. syphiliticus, A. par congestioncm.)*

In relation to their sanitive tendencies, they are divided into benign or suppurative, when they contain healthy pus and are disposed to heal, and into the ulcerative and gangrenous, when their contents are unhealthy or sanious, and when they are disposed to spread by the process of ulceration and sloughing.

When they are accompanied with an exalted condition of the vital activity of the organism, they are called acute or phlegmonous; but when they occur under an opposite condition of the system, they are designated cold or chronic abscesses.

They are, moreover, divided, according to their seat, into superficial, profound, and occult, and into external and internal, according as they occupy the superficies of the body, or some of its internal parts, as the liver, spleen, prostate, head, neck, &c. p. 63.

In the treatment of abscesses regard must be had, according to the author, to the condition of the system, and the character of the local affection. The curative procedures must, therefore, be divided, according as they are applicable to the abscess itself, or to the disturbance which it occasions in the general system. The constitutional treatment must of course be conducted upon general principles, but the local must be modified according to the activity of the vital forces of the structures concerned in the development of the abscess, the seat and course of the disease, and its extent and duration. From these considerations may be deduced the following indications.

"1. To regulate the processes of inflammation and suppuration, which constitute the source of the abscess.

"2. The evacuation of the pus.

"3. The management of the secreting surface of the abscess.

"4. To subdue the various complications which may happen to exist." p. 67.

In relation to the first indication, it will be proper, in some cases, to endeavour to disperse the tumour, and thereby to prevent the development of suppuration; while in others, the process of suppuration should be promoted by appropriate measures. The first of these objects cannot always be accomplished, yet there are particular circumstances which render it an object of great importance, as for example, when the inflammation is seated in the eye, the prostate gland, in the vicinity of the anus, &c. where the development of suppuration would either destroy the organ, or give rise to fistulous ulcers difficult to heal, or other mischievous consequences. In many abscesses by congestion, moreover, our author thinks that a cure is as well, or even better accomplished, by promoting the absorption of the pus, than by making an opening for its evacuation; an inference which, although correct to a certain extent, is certainly not borne out when applied to many abscesses of that character.

On the other hand, the process of suppuration should be promoted where the abscess is healthy; where it is placed in a situation which does not endanger any important organ, or in which it is not likely to give rise to any formidable consequences; where it evinces a disposition to become speedily matured, or where the suppurative process will have the effect of dislodging some extraneous body.

There are several means, both general and local, which possess the property, not only of keeping back the process of suppuration, but also of overcoming it, under some circumstances, even after it has become established.

Amongst these, one of great importance is local blood-letting, by

which the inflammation may be generally subdued before the suppuration is fully established. As cuntributing to the same end, the author recommends the employment of drastics, and such means as are calculated to promote absorption, and excite a revulsive impression; as frequently repeated, and full doses of calomel, a succession of emetics, abstinence, nauseating doses of antimony, warm bath, &c. As local applications, cold will, in many cases, be found highly useful; but in some instances the employment of warmth, in form of cataplasms or fomentations, will be found more beneficial. Various stimulating applications are also employed in form of friction, plaster, lotions, &c. and sometimes when there is not much inflammation, with a salutary result.

"Of these, the best are a solution of muriate of ammonia in vinegar, applied warm; the emplastrum resolvens Schmuckeri, the emplastrum mercuriale, a mixture of 4-8th emplastrum diachylon compositum; 3-8th emplastrum mercuriale, and 1-8th emplastrum cantharidum ordinarium; a mixture of tart. emetic, of emplastrum diachylon, emplastrum meliloti, and emplastrum oxycroceum; the emplastrum cantharid. or the application of a piece of cautic, so as to produce an eschar; onions, salt, mustard, horse-radish, and other stimulating applications. A red hot iron held near the part, so that its electric rays may fall full upon the tumour, is a most powerful discutient measure."

The author has omitted to mention the various preparations of iodine, which have been found, in modern times, the most efficient means of accomplishing the objects under consideration. We have also seen a cup drawn over the surface of the tumour, produce a happy effect, and in some instances accomplish the resolution of the disease in a short time. The continuous application of a bladder, filled with pounded ice, will sometimes accomplish our object much more effectually than all the stimulating plasters detailed above.

When the object is to encourage the maturation of the abscess, care must be taken not to reduce the inflammation below the proper point; but when it is too feeble, such measures should be resorted to, as will be calculated to give to it the requisite degree of activity. The best applications, under ordinary circumstances, are such as are calculated to retain heat and consistence; as emollient cataplasms, composed of linseed meal, bran, oatmeal, bread, &c. made into a poultice with water or milk. Where the pain is very distressing, we may add to any of these poultices, a sufficient quantity of laudanum, poppy heads, cicuta, hyosciamus, &c. Should the condition of the parts be such as to require an exaltation of their activity, the cataplasms should be rendered more stimulating by the addition of mustard, onions, black soap, &c. Various exciting plasters have

been recommended for the purposes under consideration, as the emplast. diach. E. resinosum, E. ammoniaci, galban. and many others of a similar character.

When the abscess is sufficiently maturated, the matter should be evacuated, but the practice to be pursued under such circumstance, is detailed under the article, "*Oncotomia.*"

When the abscess is of a healthy character, and a free exit has been given to the matter, the case will require but little interference on the part of the surgeon. Most that will be requisite, will be to keep the part in an easy posture, to apply light dressings, and if the orifice should evince a disposition to close too early, to open it with the point of a probe, or where that is impracticable, with a lancet or bistoury. It will seldom be proper to introduce tents, or other irritating means, which are sometimes used under the pretext of giving free exit to the matter, as their presence always proves a source of irritation, and sometimes excites so much inflammation in the parietes of the sac, as to greatly exasperate the disease, and increase the suppuration. In some cases, however, the excess or defect of the inflammation will render it requisite to resort to such means, after the matter has been evacuated, as are calculated to subdue or exalt inflammatory action. When the activity of the part is too great, antiphlogistics will be the appropriate remedies, as the local abstraction of blood, the employment of warm emollient cataplasms, to which a small quantity of opium, cicuta, or hyoscíamus, will form a useful adjunct; the application of light pledgets of lint spread with simple cerate, &c.

It happens much more frequently, that the vital powers of the part are too feeble, and require to be stimulated. In such cases, the secretion is generally defective, or is thin and serous, or sanious. In some instances, it will be proper, under such circumstances, to make a free opening in the abscess, and to fill its cavity with dry lint, or with a dossil of lint spread with some digestive ointment, or imbued with some stimulating material. Amongst the various substances which may be employed with this intention, the following are recommended by the author; the common digestive ointment, basilicon ointment, the balsam of Frahmius, a solution of caustic potash, of the nitrate of silver, or corrosive sublimate, in camphorated spirits. Fluid preparations of a similar kind may also be injected into the cavity of the abscess. With the same view, a seton or ligature may be drawn through the abscess. The constitutional treatment must be varied to suit the nature of the case, and should be strictly antiphlogistic where the acuteness of the symptoms requires it, but invigorating and nu-

tritious where the powers of life are enfeebled. Under the latter circumstances, a generous diet and a pure atmosphere should always be called into requisition, and as calculated to second their effects, the patient may be put upon the use of tonic medicines, good wine, &c.

This is a brief summary of the doctrines and practice inculcated by Dr. Sommen, a distinguished army surgeon, in relation to the characters and treatment of abscesses. It will be seen that his observations are generally judicious, and his practice such as should be pursued in the management of a majority of the affections under consideration. With regard to treatment, however, he has omitted the consideration of many modifications and details which are often important. To supply this defect, some very valuable reflexions are appended to the article by Professor Rust himself, the learned editor, who has entered more fully into the discussion of some points connected with the treatment than has been done by Dr. Sommer. As however, most of his practical precepts are referable to the several indications laid down above, and will readily suggest themselves to the judgment of the surgeon, we shall not stop to discuss them in the present place. The whole article furnishes a very good exposition of the pathological characters and treatment of the disease, and is highly creditable to its author. We may make the same remark in relation to the several articles which treat of the abscesses that are developed in different parts of the body; as for example, in the abdomen, the glandular system, the neighbourhood of the anus, the antrum, the ear, the head, &c. all of which contain much useful information. That on abscess of the ear by Professor Beck of Frieberg, is highly commendable. He is the author of an excellent work on the diseases of the ear, which we have already noticed in a preceding number of this journal. We shall be more particular with regard to an article entitled *Abscessus Capitis Sanguineus Neonatorum.* This is a form of disease which, although it has been particularly noticed by some pathologists, has been very much overlooked by a large majority of them. Under this appellation, or that of *cephalæmatoma*, the author, Professor Dieffenbach, wishes to describe a sanguineous tumour, which is sometimes developed between the pericranium and the bones of the head of new-born children, and which frequently continues for several days, or weeks after birth. These tumours are, at first, soft and doughy to the feel, but afterwards become tense and elastic, and sometimes seem to be surrounded by a sharp prominent margin, which feels like a ledge of bone. There is at the commencement no discoloration of the skin, but in proportion as it becomes more distended, it acquires a glossy and varnished appearance. The

temperature of the tumour is seldom elevated above that of the head, and when the palm of the hand is pressed upon its surface, a kind of thrilling, or pulsatory sensation can sometimes be perceived. The volume and configuration of the tumour are exceedingly variable; sometimes they are not larger than an ordinary bean, but in some cases they attain the volume of the fist. They are generally convex upon the surface, but are occasionally flat, and diffused over a considerable extent of the superficies of the head. They are in most cases solitary, but in some rare instances several small tumours of the same kind have been met with upon the head of one individual. They may be developed upon any portion of the parieties of the cranium, but their most frequent locality is upon the surface of the parietal bone.

"During the early period of the existence of the disease, the child seems to suffer little or no inconvenience, but as soon as any material changes begin to take place in the tumour, it becomes pale and sickly. Golis reports a case in which a tumour of this kind occasioned considerable stupor. It may, indeed, happen where the tumour is large, and the tension of the cranial aponeurosis very great, that the membranes of the brain, and even the brain itself, may experience more or less compression." p. 120.

With regard to the cause of the disease, and the period at which it takes place, there has been much difference of opinion. It has been by several individuals attributed to difficult labours, to the long lodgment of the head within the straits of the pelvis, and the application of the forceps for its delivery: yet we are informed by accoucheurs of extensive observation, that they have never seen it occur in a case in which the labour had been difficult. Paletta states that he scarcely ever met with it, except after easy labours, and Naegele's extensive experience never furnished him with an instance in which it succeeded the most difficult forceps cases. Osiander very rationally conjectures that they are congenital, or are developed before birth; and the same sentiment is adopted by Siebold, Michaelis, Schmidt, Hoerr and others.

But notwithstanding tumours of this kind occasion so little disturbance, during the first periods of their existence, their issue, when they are left to themselves, is almost invariably fatal. The extravasated blood is submitted to the process of decomposition, and becomes converted into a dark-coloured, or brown sanious diffluent putrid gore; the pericranium, which is spread out upon the fluid, is thickened; the corresponding portion of the cranial bone becomes diseased—is sometimes involved in a profound caries, or is completely perforated by absorption; the influence of the disease is communi-

cated to the brain and its membranes, and death sooner or later takes place. Naegele, Kopp, and Osiander, all detail cases in which, from the lung continoance of tumours of this kind, a perforation of the cranium, of more than an inch in diameter, was formed. Paletta also mentions a case, in which the outer table of the bone was destroyed, while the inner was perforated by a great number of minute apertures. From the contuur of the diseased bone, however, a considerable ossific deposite had taken place, which seemed to manifest a disposition to extend from the circumference towards the centre of the tumour. Chelius has, moreover, described two cases, in which the pericranium, which occupied the sorface of the tumour, was remarkably thickened, and transformed into bone, which when firmly pressed, furnished a crepitating sensation, similar to that occasioned by bending an elastic plate of metal. These were regarded by several surgeons as examples of cranial exostosis, but were both cured by laying open the tumours, and evacuating the coagulated blood.

In the treatment of these sanguineous abscesses two leading indications present themselves to the consideration of the surgeon. 1st. To disperse the tumour, where that is possible, by promoting the absorption of its contents. 2d. To give exit to the extravasated blood, and to heal up the cavity of the abscess.

With regard to the means of accomplishing the first, it is needless we should enter into any minute details. Suffice it to say, that slightly stimulating lotions, fomentations, and poultices, will be the best, which must be varied to suit the circumstances of the case. A compress and bandage have also been recommended for the same purpose, but when the tumour is large, we duubt much their efficacy.

Whenever these means have been employed for several days without success, it will be proper to evacuate the blood, and to endeavour to heal up the abscess frum the bottom. Some have recommended this to be done by caustic, others by seton; some by a very minute puncture, while several have recommended a free incision, or even the excision of a portion of the walls of the tumour. The first plan has been proposed by Schmidt and Golis; the second by Paletta; the third by Chelius; while Professor Dieffenbach recommends the fourth. As soon as the blood is evacuated, the cavity should be filled with dry lint, or with a small pledget, spread with cerate, with a view of promoting suppuration and granulation. From what we have ourselves seen, we should give the preference to a free opening, as it can occasion no bad consequences, and generally ensures a more speedy cure.

Abscesses of this kind, though most frequently observed in chil-

dren at birth, are not confined to that early period. While on a visit to Charleston a few months since, we had an opportunity, in company with our particular friend, Professor Holbrook, of that city, of witnessing one as large as a common apple, which was situated upon the parietal bone of a youth of five or six years old. It took place spontaneously, at least without any previous injury, and from its general character, we supposed it to be a common purulent abscess, but on plunging a lancet into it, nothing but red fluid blood escaped. The cavity was filled with a tent, and although the blood afterwards evinced a disposition to accumulate again, suppuration and granulation were established, and the part was finally healed. These abscesses are also sometimes developed in other parts of the body. Paletta reports a case in which one of them occupied the tibia, and Dr. Busne, of New York, treated one, which was situated upon the tarsus. It was connected with caries of the bone, which rendered amputation necessary.*

There are many other articles devoted to the consideration of various species of abscess which we shall be obliged to pass over in silence. Some of them are drawn up with ability, and contain much valuable information.

Amputatio Artuum. (Gliederabsetzung, Gliederablösung.—The accidents and diseases which call for the operation of amputation are so numerous, the proper determination of the cases in which it should be performed often so difficult, and the methods of operating so diversified, that it may be useful to follow our authors in their observations upon each of these points, the more especially, as they have treated the subject in extenso, and have evinced considerable ability in the discussion of the various topics which it involves. The first question we shall examine is—

1. *What are the causes that demand the operation of amputation?*—This is a point upon which there has existed great diversity of opinion. While Bouchen, Gervaise, Faure, and especially Bilguer, have restricted the cases in which it should be resorted to, to a very small number, many modern surgeons, some of them we fear actuated by no commendable motives, have recommended and practised amputation in cases in which the member might have been saved by appropriate medical and surgical treatment. Bilguer has been much criticized for interdicting the operation altogether, but we question much if the ills resulting to human nature would be as great by the adoption of that course, although it would unquestionably lead to the

* New York Medico-Chirurgical Bulletin, No. 5.

sacrifice of many valuable lives, than we find daily accruing under the influence of the mania for the performance of operations, by which many modern surgeons are actuated. It is the duty of every surgeon to avoid both these extremes, and only to resort to amputation in those cases in which it is indispensably necessary to the safety of the patient. It is unfortunate, however, that such cases cannot always be with certainty determined, and for the want of definite rules of discrimination, it must sometimes happen, that limbs will be sacrificed which might be saved without an operation, and on the other hand, that some lives will be lost, which might be preserved by timely amputation. The following are the objects laid down by the author as calling for the operation:—

"We resort to the operation of amputation for the removal of such local diseases of the extremities, as are, in the present condition of the science, incurable, or are rendered so by either the external or internal relations of the individual, and which consequently endanger his life, or disqualify him permanently for the offices and enjoyments of existence." p. 538.

The following may, therefore, be regarded as the principal circumstances requiring the operation:—

"1. Where a member is extensively lacerated, or in part carried away by external violence, as for example, by a cannon-ball, by machinery, &c., in which cases as the extent of the laceration, the irregularity of the surface, the projection of the bones, the tendency to gangrene, and other circumstances, will render it impossible to effect a cure, it will be necessary to convert it into the nature of a simple wound, by resorting to the operation of amputation.

"2. Where, by external violence, the bone of the member is so extensively splintered, and the soft parts are, at the same time, so much contused and lacerated, as to render their restoration impracticable, death from gangrene and sloughing can only be prevented by the removal of the injured member.

"3. Where the bone is uninjured, but where the soft parts, and especially the important vessels and nerves are torn, or extensively contused, amputation affords the only means of preventing the development of gangrene, and the consequent death of the individual.

"4. Where a cannon-ball, or large shot, strikes one of the members obliquely, so as to violently contuse or lacerate the deep-seated soft parts, to tear the vessels and nerves, shatter the bones, &c., without materially injuring the superficies of the limb, the life of the patient can only be saved by a timely resort to amputation.

"5. Amputation will also be necessary in those cases, in which a considerable articulation, especially the knee or the elbow, sustains a violent injury, by contusion, a laceration of its ligaments, from a violent dislocation, fracture or crushing of the articulating extremities of the bone, the tearing up of the soft parts of the joint, with an escape of the synovial fluid, the extravasation of a considerable quantity of blood within the capsule, together with other formidable injuries of its structures. If the operation be not performed under such

circumstances, the patient will be destroyed by violent inflammation, and suppuration, caries, gangrene or tetanus.

"6. In those cases in which either from a wound, from the influence of disease, or the ravages of extensive suppuration—from gangrene, an aneurismatic condition of the large arteries or veins, an alarming hæmorrhage ensues, which on account of the inaccessable situation of the artery, or its peculiar condition, cannot be arrested by the usual means, amputation will present the only chance of saving the life of the patient.

"7. When a profound metamorphosis, or extensive degeneration of the structures of one of the extremities takes place, as for example, an extensive pseudo-erysipelas, large encysted and fungous tumours, elephantiasis, aneurisms, with an extensive destruction of the adjacent parts, and these endanger the life of the patient, either by their influence on the constitution, or their local ravages, amputation furnishes the only means of preserving the individual against destruction.

"8. The same is true, where similar transformations, or degenerations, seize upon the bones in such a manner, that the disease cannot be removed by the extirpation of the affected bone itself, or where they give rise to a transformation of its substance into a sarcomatous, encephaloid mass, or involve it in a profound destructive process, as in caries, &c.

"9. Also in incurable diseases of the joints. (Tumor albus, arthrocace, arthropyosis neglecta, &c."

These may serve very well as general rules, but it may occur in every individual, who is engaged in extensive surgical practice, to witness the preservation of both life and limb under several of the conditions which have been enumerated. Yet such success should rather be considered as constituting exceptions to a general rule, than as militating against the justness of the rules themselves; for, as the author very properly observes, we may sometimes obtain a single successful issue without the operation, at the expense of ninety-nine victims, sacrificed to an omission, or rejection of it. It must be confessed, however, that it is impossible to prescribe rules which shall be applicable to all cases. Every one possesses some peculiarities, and all that can be done is to lay down general axioms, and leave their application to the judgment and discretion of the practitioner.

There are, besides these, some other conditions under which amputation may become necessary, and which have been considered by some surgeons as always calling for its employment. The following circumstances are detailed by our author, as sometimes demanding the operation.

"10. Where, from the situation of the patient, or the nature of his disease or injury, the means necessary for the preservation of the member cannot be commanded; as for example, on the field of battle, or during a retreat, when an individual has received a complicated fracture, a severe penetrating wound

of an important articulation, and proper remedies or dressings cannot be obtained, or where the means of transporting him to a convenient situation for conducting the treatment, are not at hand. In such cases, amputation will sometimes become necessary to save the life of the patient, although he might, under favourable circumstances, be cured without it.

"11. When an injury or disease is of a nature not to endanger the life of the patient, but to admit of cure, but only by leaving the member in such a state as to render it altogether useless; as for instance, by the development of an artificial joint; and

"12. In those cases, in which a member is so circumstanced or distorted, as to render it a source of great inconvenience to the individual, as an anchylosis of one of the extremities, which is, at the same time, so flexed or extended, that it interferes materially with the offices of life; an artificial joint implicating the lower extremities; or distortion of the fingers, &c." p. 540.

We doubt much the propriety of amputating merely for the removal of an artificial joint, more especially as the resources of surgery furnish means, which are amply adequate, at least in a majority of cases, to overcome the disease, and restore the utility of the member. The seton, the cautery, the excision of the extremities of the bones, &c. should always be tried first, and we are of opinion, that the number of cases in which some one of those remedies will not succeed, will be found exceedingly rare. We should also weigh well all the circumstances before we resort to amputation merely for the removal of an anchylosis, or a member attended with distortion. It should always be borne in mind, that the operation may occasion the death of the individual, and the inconveniences incurred by such a condition, though frequently very great, are seldom so considerable, that a removal of them should be purchased at so much hazard. We have known an individual lose his life by a surgeon, yielding to his solicitations, and performing the operation under such circumstances, even though the state of his constitution was such as to furnish every prospect of a successful issue.

Gangrene has, at all times, been considered as a condition calling for amputation, especially under some circumstances which frequently attend it. Our author, however, observes, that gangrene itself can never demand the operation, which is only required by the consequences to which it gives rise. It will never be proper to amputate while it is yet in its forming stage, inasmuch as experience hath shown, that many cases can be cured by appropriate treatment, without sacrificing the member. When the death of the part is fully established, and the process of destruction is still progressive, our author affirms, that the operation has no power to arrest it, but may, on the contrary, hasten its extension, by the injury it inflicts on the

organism; and should the mortification be fully arrested by the establishment of a line of separation between the dead and the living parts, the operation cannot be necessary; because the powers of nature are sufficient to throw off the mortified portion of the member. As, however, it will frequently happen, that after the dead parts have separated, the remaining stump will be so uneven, or the bone will project so much, as to render it impossible to cicatrize its surface, amputation will become necessary, to form such an one as will admit of being healed. Under such circumstances, therefore, the operation should be resorted to, as soon as a distinct line of demarcation shall have been formed, provided the condition of the patient, in other respects, does not contraindicate its employment, because by waiting for the complete detachment of the soft parts, and especially the bone, he will be submitted to an unnecessary degree of irritation and suffering. In those cases, moreover, in which the gangrene is so extensive as to render it impracticable to save the member, and a profuse hæmorrhage takes place from the main artery, it will be better to amputate at once, than to cut down above the seat of the injury, with a view of securing the vessel, as the former operation will be eventually necessary, and it will, of course, be improper to submit the patient to the double suffering and danger of also performing the latter.

We fully concur with the author in objecting to the operation for the removal of tetanus. The injury is no doubt the cause of that disease, but it only proves instrumental in its development by irradiating its influence throughout the nervous system, and by giving rise to a pathological state of some portion of the nervous centres, which cannot be removed by the amputation, although by resorting to that operation, we can readily remove the injury by which it was excited. We are aware that this disease has been laid down by many respectable surgeons as furnishing an indication for the operation, and we have seen it practised, under such circumstances, a considerable number of times, but in every instance it has failed to arrest the disease.

II. *At what period should the amputation be performed?*—This is a question on which the sentiments of practitioners have been much divided, nor is it an easy matter to furnish an answer, which can be adopted as a general rule of practice, so numerous and diversified are the conditions and complications attending the cases which require the operation. The principal difficulty exists, however, in relation to recent injuries in which amputation becomes necessary, the decision being much easier in chronic cases, when the ability of the

patient to endure it, and the condition of the wound, are the principal circumstances demanding attention. The following is laid down by the author as a leading principle to be observed in determining this question.

"The operation should be resorted to at a time when the general system is not affected with any general disturbance, which, by becoming complicated with the consequences of the operation, might tend to excite a dangerous degree of reäction. As, therefore, a general disturbance of this kind, a violent sympathetic inflammatory fever, for example, is a necessary consequence of all extensive injuries, it will be proper to amputate either before the fever is developed, or to delay the operation until the inflammation is subdued." p. 543.

At the time of the reception of the injury, the vital powers generally sustain such a shock, that to amputate before they are rallied from the state of oppression with which they are overwhelmed, would be to destroy the patient. In most cases, however, where the surgeon is asked to amputate under such circumstances, there will be a period between this state of oppression and the inflammation, which sooner or later supervenes upon it, at which the vital forces have sufficiently reäcted, to admit of the operation being performed with safety. If, however, this juncture be allowed to pass by, and violent inflammation with great disturbance of the general system has taken place, it will be unsafe to operate until the organism has been reduced by appropriate treatment, to obviate the hazard which would otherwise arise from the additional shock inflicted upon the organs by the operation. A contrary course is too often adopted, especially on the field of battle, and the melancholy consequence is, that a large proportion of those who are subjected to amputation, fall victims to this improper practice. We do not think of performing an operation on the eye, when that organ is affected with inflammation, nor, indeed, to submit an individual to any other important operation, without having first prepared the system by appropriate treatment; yet many surgeons, losing sight of this important rule of practice, do not hesitate to jeopardize the lives of their patients by resorting to amputation, while the whole system is in a complete tumult, occasioned by the influence of the injury. No correct rule can, therefore, be predicated upon mere lapse of time, but every thing should be determined by the condition of the patient.

III. *At what point may the amputation be most conveniently and advantageously performed?*—This question is much more easily settled than the preceding. There are two points at which the operation of amputation may be practised; through the articulations, and through the continuity of the bones themselves. The first was recommended

by GALEN and most of the ancients, but afterwards fell into disrepute, until it was revived in modern times by BRASDOR, and subsequently by LARREY. The advantages or disadvantages attending that method of operating will depend upon the magnitude and kind of articulation upon which the operation is performed. For the removal of the fingers and toes, and the carpus and tarsus, it should always be preferred, because those articulations are small, and do not present such an extent of surface as to involve any serious risk from inflammation, and the operation can be there performed with less violence to the structures than by sawing through the bones. Amputation may also be practised with safety at the shoulder and hip-joints, yet when the injury is not situated so high up as to compel us to adopt those operations, it will be better to operate through the continuity of the femur or humerus. BRASDOR, VERDUIN, DUPUYTREN, and some others, have repeatedly amputated with success through the elbow-joint, but as that operation involves more hazard than the common method of amputating through the humerus, and secures no more advantages to the patient, we think it ought not to be performed. With regard to the operation at the knee-joint, we think it should never be resorted to; for although the successful issue of a few cases have proved that it may sometimes be practised with safety, the fatal termination of many others clearly prove that it is unsafe. The extent of surface presented by that articulation, the numerous structures that enter into its formation, and, above all, their remarkable proneness to become affected with violent inflammation, are circumstances which alone should forbid the operation, to say nothing of the reticulated extremities of the bones, the difficulty of securing a sufficient flap to cover the stump, and the tardiness with which the soft parts form an adhesion with the surface of the cartilage. A flap cannot be formed at the ankle-joint, and as the wrist is so completely surrounded by tendons and synovial sheaths, as to expose the patient to great danger from inflammation, the operation should never be practised in those situations. In all other cases, therefore, than those specified above, it will be best to amputate through the continuity of the bones.

The next question discussed by the author is, what is the best method of operating? We shall not dwell upon this point, but shall merely observe, that each of the methods; that is, amputation by the circular incision, and by a single or double flap, has its advantages in particular cases. That which, in any case, can be performed with the greatest ease to the patient, and is calculated to form the best stump, should always be selected.

We shall not follow the author through his description of the method of performing the individual amputations, as this would be an act of supererogation. Suffice it to say, that he enters into a fair and candid examination of the various methods proposed by authors, and after pointing out their advantages and defects, describes that which he prefers. The following is his method of amputating at the shoulder joint, which, it will be seen, does not differ materially from one of the plans proposed by LARREY.

"I make a longitudinal incision, from the point of the acromian to the insertion of the deltoid, so as to expose the head of the bone, with a view of ascertaining whether it is healthy, and can be left. If it should not be diseased, I decapitate it, and suffer the head to remain. If diseased, so as to require removal, I extend two oblique incisions from that already made, and from the vicinity of the head of the bone, one of which is carried upwards and backwards, towards the shoulder, the other downwards, towards the axilla, so as to form two triangular flaps. These are then dissected back, and turned out of the way. A double-edged amputating knife is then carried between the acromian and the head of the humerus, and conducted in such a manner as to divide both the capsular ligament and the tendon of the biceps muscle, the arm being at the same time elevated, so as to allow the blade of the knife to glide through the joint, and to complete the operation by cutting a third triangular flap, which is situated posteriorly and inferiorly, and which may be approximated with the others by means of strips and bandages." p. 603.

The only advantage presented by this operation is, that the first incision will expose the head of the bone, which, when it is healthy, may thus be saved, if any utility can be presumed to arise from the adoption of that course. But when it is the object to remove the whole arm, regardless of the condition of the bone, the operation of LISFRANC will be much better, as it can be more expeditiously performed, requires less dissection, will inflict less suffering upon the patient, and will form a better stump.

The leg may be amputated either by the circular incision, or with a flap. When the operation is performed below the calf of the leg, it is sometimes difficult or impossible to turn up the integuments, in consequence of the portion of the leg, which is situated above the incision, being considerably larger than that from which the integuments are raised. To obviate this difficulty, the author practises two perpendicular incisions, one before, the other behind, so as to form two flaps of the length of one-third the diameter of the leg.

When the operation is performed in the second manner, the flap must be formed of the muscles and integuments of the calf of the leg, because, in front, there are not sufficient soft parts to cover the face of the stump. This may be done in the manner practised by VERDUIN,

by cutting from without inwards, or according to the method more generally resorted to in modern times, of transfixing the fleshy part of the leg, and forming a flap by cutting from within outwards and downwards. The following is the plan recommended by our author.

"The operator, placed on the inner side of the leg, grasps, with his left hand, the calf of the leg, in such a manner as to have the index finger fixed upon the fibula, when he wishes the point of the knife to come out, while the rest of the fingers and the palm of the hand are placed upon the posterior and internal part of the calf of the leg, so that he can draw the integuments and muscles backwards. A large double-edged amputating knife is then introduced immediately behind the inner margin of the tibia, at the point at which the bones are to be sawed, from whence it is to be thrust through the soft parts, while they are drawn backwards with the left hand, so that the point shall be brought out by grasping the posterior face of the fibula, at the point designated by the index finger. With a sawing motion of the hand, the knife is then to be carried downwards, in such a direction, that by cutting itself out, a flap will be formed of the length of two-thirds the diameter of the leg. With a convex-edged scalpel, the operator is next to extend a semilunar incision across the front and outer part of the leg, the extremities of which should intersect the first incision, half an inch below the point at which the bones are to be divided. The integuments should then be dissected to a level with the base of the flap, and the latter being turned up, and supported by an assistant, the soft parts situated between the bones are to be divided with a common catlin." p. 614.

This stage of the operation completed, the bones are to be sawed in the usual way. The author, however, observes very correctly, that where both bones are sawed at the same level, the fibula generally projects beyond the extremity of the tibia, so as sometimes either to protrude through the integuments, or keep up violent inflammation, by pressing against them. The saw should, therefore, be so conducted, as to divide that bone at least half an inch higher than the other, which is generally practicable, or a small portion of the fibula should be removed by means of a common metacarpal saw, while its end is held steady by an assistant, with a pair of common forceps.

We have generally preferred this method of amputating the leg, and although we have practised it frequently, we have never seen the sloughing of the flap, which has been urged as an objection against it. We think it decidedly preferable to the operation by the circular incision, as it forms a better stump, heals more readily, and subjects the patient to less pain. We are always cautious, however, to make the flap of sufficient length to cover the face of the stump, without straining the integuments, and in transfixing the member, we generally make the point of the knife describe the arch of a circle, the concavity of which is directed towards the bones, while the soft parts are drawn forcibly backwards with the left hand. By this means the

flap is slightly hollowed at the base, so that when it comes to be applied to the face of the stump, the muscles do not project beyond the skin, which they are sometimes apt to do, if this precaution be neglected. We also saw off a small portion of the anterior angle of the tibia, by carrying the saw in an oblique direction, either before or after the bone is sawed through. This practice, which is adopted by many of the French surgeons, is of considerable importance, for the sharp angle of the bone, if suffered to remain, is apt to project through the integuments.

We shall pass over many important articles, abounding with valuable information, and drawn up with much ability, to consider the subject of aneurism.

Aneurisma, *(Schlagadergeschwulst, Pulsadergeschwulst,)* is, according to the author, generally defined a pulsating tumour, filled with blood, and communicating with the cavity of the heart, or some artery. In the first case, it is called a cardiac, and in the latter arterial aneurism. Aneurisms are, moreover, divided, according as they are formed by a simple dilatation of the parietes of an artery, *(Dilatatio arteriæ, S. Arteriochalasis,)* or by a rupture of the tunics of the vessel, *(Ruptura arteriæ, S. Arteriodialysis, S. Arteriorhexis.)*

Galen and after him Paulus Aegineta recognised both these species of aneurism; but at a later period it was inferred by Aetius, Oribasius, Albucasis, and Actuarius, from the diffused character of the tumour, that the blood was merely extravasated beneath the integuments, this act taking place in consequence of either *anastomosis, diapedesis,* or *diacresis.*

Aneurisms are furthermore subdivided according to their nature, form, situation, symptoms, complications, &c.

1. *True Aneurism.*—This consists in a morbid dilatation of all the coats of the vessel, and may be partial or complete, according as a small portion, or the entire circumference of the vessel is implicated. The latter is divided into spheroidal, or cylindrical, according to the configuration of the tumour; into circumscribed true aneurism, where the contour of the tumour is abruptly and distinctly defined, and diffused true aneurism, where the circumference is lost in the surrounding parts. The possibility of the development of aneurisms of this class has been fully established, notwithstanding the doubts of some pathologists on the subject:—1. By the researches of the most skillful anatomists; 2. By the development of a general aneurismatic diathesis, as observed by Morgagni, Haller, Matani, Sœmmering, E. Home, Tartia, Michaelis, and others; 3. By the dilatation of the collateral vessels, which takes place after a ligature

has been applied to the main trunk of an artery; 4. By the frequent observation of an enormous dilatatiun of the aorta and pulmonary arteries of some amphibious animals; 5. By what takes place in that form of disease called aneurism frum anastomosis.

Scarpa, as is well known, objects to this division of aneurisms into true and false, although he does not deny that the vessels are susceptible of having their entire circumference dilated in the manner here represented. These dilatations, however, he does not consider as participating of the nature of aneurism, which he conceives is always attended with a rupture or destruction of the internal and middle bodies of the vessel, and the subsequent dilatation of the cellular, (which he thinks does not appertain properly to the artery,) to form the walls of the sac. These ruptures he represents as generally occasioned by an ulcerative, earthy, fungous, or steatomatous degeneration of the coats of the vessel, and the simple dilatation he thinks occurs much less frequently than has been generally represented. In favour of this opinion, he urges the following arguments; 1. The slight elasticity of the proper arterial tunics; 2. The obstacles furnished by the degenerations to which they are subject, which disposes them to give way rather than to become dilated; 3. A careful examination uf the structure and properties of the aneurismal sac, which does not present characters correspondent with those developed by simple dilatation. Notwithstanding all these objections, it has been ascertained by repeated examination, that tumours formed at first by a simple dilatation of the tunics of the artery, take on all the characters of aneurism, and when left tu themselves, eventually lead to the same termination, as those which are developed in the manner represented by Scarpa. Such cases have been detailed by Malpighi, Morgagni, Sandifort, Hunter, Laennec, Hodgson, Naegele, Erhardt, and many other pathologists. They take place more frequently in the aorta, and other large deep-seated arteries, than upon the superficies of the body, and in some instances attain an enormous magnitude.

2. *Spurious or false aneurism.*—This form of the disease consists in a partial destruction of the continuity of a vessel, and the extravasation of the blood in the surrounding parts. It is called a circumscribed, or consecutive, false aneurism, (cysticum, s. saccatum, s. consecutivum, s. secundarium,) when it is occasioned by a destruction of the internal and middle coats of an artery, with a dilatation of the external, or cellular coat, to form a sac; but when all the coats of the vessel are simultaneously ruptured, and the blood is diffused

into the adjacent parts, it forms what is called a primitive, or diffused, false aneurism.

3. A mixed aneurism, (A. herniosium,) is that form of the disease, in which the outer tunics of an artery are destroyed, while its inner tunic is protruded through the aperture in form of a small sac, as takes place in the cornea, in the affection designated ceratocele. Its occurrence has been doubted by some pathologists. Dupuytren and Dubois, however, report cases.

4. Varicose aneurism.

5. Aneurism from anastomosis—Telangiectasis.

6. Spongy aneurism—Fungus hæmatodes. Band. 2, p. 5.

The treatment of aneurism is divided into medical and surgical, or pharmaceutical and operative. Under the first head are included diet and regimen; the free abstraction of blood, the long-continued employment of digitalis, the application of ice to the part, and, in short, all those means that are calculated to keep down the force of the circulation, so as to favour the development of an extensive coagulum in the sac, and the subsequent obliteration of the vessel, or the sac itself. To effect a cure by medical treatment great perseverance will be necessary, and the patient must be kept in a constant state of quietude and immobility, and have his system reduced by blood-letting and diet, until it is, to use the language of Hippocrates, *siccissimus* et *exsanguissimus*. Not much reliance can, however, be placed on the medical treatment of aneurism. To obliterate the diseased vessel, or divert the current of blood from the sac, surgical means must generally be resorted to. These are variable, but all have the same object in contemplation. The following scheme, drawn up by the author, will present a pretty fair synopsis of the usual surgical means resorted to for the cure of aneurism.

A. *By Compression.*

It differs principally from the treatment by ligature in this, that the compression acts in a lateral direction, whereas the force of the ligature is circular.

I. Compression of the tumour itself. (J. De Vigo.)

II. Compression of the trunk of the vessel leading to the tumour. (Blizard, Boyer, Richten, Hebenstreit, &c.)

III. Compression of the trunk of the vessel coming from the tumour. (Vernet.)

IV. Compression of the entire member by bandage. (Genga, Theden.)

B. *Operative Procedures.*

I. Ligature of the aneurismatic vessel.
  1. With a simultaneous operation upon the sac.
    a. By opening the sac, and evacuating its contents.
      a, a. Previously to placing a ligature above and below it. (Antyllus.)
      b, b. After applying a ligature above the sac. (Aetius, Paulus Aegineta, Guiellmeau.)
      c, c. After applying a ligature both above and below the sac. (Bertrandi, Boyer.)

The methods *b, b,* and *c, c,* are not practised at the present day, inasmuch as the operation is attended with many difficulties, and by the method *b, b,* there is generally a dangerous hæmorrhage, by the return of the blood through the lower orifice of the vessel.

    b. Extirpation of the sac after having applied a ligature above and below it.
      a, a. Extirpation of the entire sac. (Aetius, Purman, Platner, Pallas, Spangenberg.)
      b, b. Partial extirpation. (Pallas.)
  2. Without interfering with the aneurismal sac.
    a. By the application of a ligature between the heart and the tumour.
      a, a. In the vicinity of the tumour. (Anel.)
      b, b. Remote from the tumour. (Hunter.)
        1. By gradually tightening the ligature. (Dubois.)
        2. By dividing the vessel between two ligatures. (Tenon, Bell, Maunoir, Abernethy, and probably Celsus.
    b. By the application of a ligature between the swelling and the peripheric extremity of the vessel. (Brasdor, Desault, A. Cooper, Wardrop, Home, Bushe, Mott, &c.)

II. By approximating the sides of the vessel by compression applied to it alone without implicating the surrounding parts.
  1. By means of a particular instrument. (Assalini.)
  2. By means of a roll of lint, a piece of cork, a small block of wood, &c.

III. By incision of the aneurismal sac with the subsequent employment of pressure. (Guattani, Brossard, Sabatier, &c.)

IV. Cauterization of the tumour.
  1. By the actual cautery. (Lanfranchi.)
  2. By the potential cautery. (Fallopia.)

To this enumeration of the author we will add—

V. By transfixing the artery with a needle. (Velpeau.)

1. With a needle brought to a white heat. (Bushe.)

Many of these curative proceedures are now no longer employed, the method of Hunter having taken the place of nearly all the others. It presents many advantages which entitle it to the preference. It is more easily put in execution; the ligature is always applied upon a sound portion of the vessel, and the patient is not submitted to the painful incisions, and the extensive inflammation and suppuration developed by most of the other methods of operating, and, in addition to all this, is less liable to secondary hæmorrhage. There are but few cases to which it is not applicable, and these only arising from the proximity of the aneurism to the heart, by which sufficient space is not left to apply a ligature to the cardiac extremity of the vessel. Under these circumstances, the plan originally suggested by Brasdor, of applying the ligature on the distal side of the tumour, may be resorted to, and has been repeatedly practised with success, by Wardrop, Home, Bushe, Dupuytren, Mott, and some others. The method, by transfixing the artery with a needle, is only applicable to aneurisms occupying the small vessels, and will be found very useful, when the needle is used hot, for the removal of telangiectasis, where the tumour is small. (Bushe.) Several important cures have been effected by the employment of *pressure of the arteries*, and a considerable number by copious depletion, extreme low diet, and the application of ice to the tumour.

We shall not follow the author through all his observations upon the treatment of aneurism, which, suffice it to say, are generally highly judicious and satisfactory. It will be sufficient, in illustration of the usefulness of his labours, to describe the method of taking up some of the most important arteries for the cure of the disease.

1. *Ligature of the axillary artery, below the clavicle, (Desault, Pelletan, Keate, Chamberlaine, &c.)*—This operation is called for, when the aneurism is so small, or is situated so low down, that sufficient space remains to admit of its being secured between the clavicle and the point at which the vessel engages itself beneath the pectoralis minor muscle, or where that vessel has been wounded so high up, that the hæmorrhage cannot be arrested by operating in the axilla.

The patient being placed in a sitting or horizontal position, is to have his arm extended to a right angle with the body, so as to put the pectoralis major muscle on the stretch. An assistant placed behind him, inclines the head to the opposite side, and remains ready to compress the artery, where it passes over the first rib, by means of

Erlich's blunt hook, in case of any alarming hæmorrhage taking place during the operation. According to Rust, the incision should be commenced immediately beneath the middle of the clavicle, and extended outwards towards the coracoid process, along the furrow situated between the deltoid and pectoralis major muscle. This incision should be from two and a quarter to two and a half inches long. It will divide the platysma myoides, half the fibres of the clavicular portion of the large pectoral muscle, and the tendinous portion of the pectoralis minor. The borders of the wound being held asunder by an assistant, the surgeon, with his finger, isolates the artery from its connexion with the brachial plexus and the subclavian vein, after which the ligature is to be passed beneath the vessel by means of an aneurismal needle, and drawn tight upon it and tied, while the knot is pressed down by the tip of the finger. Should the external thoracic be cut, as will sometimes be the case, it must be secured.

Langenbeck makes an incision of three or four inches in length, the central part of which is situated beneath the middle of the clavicle, while its outer extremity reaches the deltoid. By this method, the cephalic vein is apt to be wounded. Band. 2, p. 61.

A much better method of operating than either of these, is that proposed by Marjolin, and recommended by Lisfranc. The incision commences two and a half inches on the outer side of the articulation of the clavicle with the sternum, and is carried outwards upon the line which separates the clavicular from the sternal portion of the pectoralis major muscle. The arm is then brought to the side, to relax the muscle, and the surgeon isolates and secures the vessel with the ordinary precautions.

2. *Ligature of the artery above the clavicle, (Ramsden, White, Travers, B. Cooper, &c.)*—This operation is necessary when the aneurism is situated so high up, or is so large, that the vessel cannot be secured beneath the bone. It is easily executed in the dead subject; but on the living, where the clavicle, together with the scapula, is so much thrown upwards, by the magnitude of the aneurism, it is attended with many difficulties. Hodgson and Rust place the patient in the same position as for securing the artery below the clavicle. The shoulder being carried backwards, the surgeon commences an incision near the outer border of the sterno-mastoideus muscle, which is carried directly outwards behind and parallel with the clavicle, to the extent of two, or two and a quarter inches. This incision is carried through the skin and platysma myoides. The cellular tissue and glands are then to be separated with the finger, or Cooper's

scissors, and the artery is to be secured where it occupies the angle formed by the anterior scalenus muscle and the first rib.

Dupuytren and Gräefe, with a view of giving extent to the incision inwards, and facilitating the elevation of the vessel from its bed, divide the attachment of the scalenus muscle upon a grooved directory. This procedure can seldom be necessary, and should be avoided, except where it becomes indispensable, as in very fat persons, on account of the danger of dividing the phrenic nerve, or the subclavian vein. Liston makes first an incision of two and a half inches, parallel with the clavicle, and forms a second, which is perpendicular, of an inch and a half in length, upon the outer border of the sterno-mastoid muscle, and which falls upon the inner extremity of the first. Rust extends an incision of two inches in length in an oblique direction outwards and downwards, towards the middle of the clavicle, so as to fall upon the triangular space formed by the sterno-mastoid muscle, and the posterior belly of the omo-hyoideus. This method will sometimes afford greater facilities than those which have been detailed, where the clavicle is forced much upwards. Care should be taken not to wound the external jugular vein. p. 63.

3. *Ligature of the external iliac artery.*—We shall not detail all the methods of taking up this artery, which have been laid down by our author. That of Sir A. Cooper is the most simple, and the following, proposed by Langenbeck, does not differ materially from it in principle. An incision of four fingers' breadth in length, commencing two fingers' breadth from the anterior superior spinous process of the ileum, and a little higher up, is to be extended obliquely downwards and inwards towards the rectus muscle, and end one finger's breadth above Poupart's ligament. The tendon of the external oblique muscle is then to be divided in the direction of the first cut, having the internal oblique and transversalis entire. These muscles are to be detached from the peritoneum, and turned up by means of a blunt hook, while the artery is isolated and secured in the usual manner. p. 71.

4. *Ligature of the subclavian artery before it escapes between the scaleni muscles.*—Sometimes the aneurism is situated so high up upon the artery, that it cannot be tied between the clavicle and the scalenus muscle. Under these circumstances, it becomes necessary to search for the vessel before it reaches that muscle. This is, however, attended with many difficulties, and involves considerable hazard. In front of the artery, we have the pneumogastric and phrenic nerves, and the subclavian vein, which, when it is distended, covers the vessel at the point at which it has to be exposed. Behind it is the infe-

rior cervical ganglion of the sympathetic; below it, the pleura, and on the left side, the thoracic duct arches over the upper part of the artery, to reach the subclavian vein. On the right side, the posterior part of the vessel reposes in contact with the recurrent nerve.

A horizontal incision is to be made immediately above the sternal end of the clavicle, which is to be carried through the skin and platysma myoides muscle. A grooved directory should next be passed beneath the clavicular portion of the sterno-mastoid muscle, which must be divided. With the handle of the scalpel, the loose parts about the vessel are to be separated, so as to expose it if possible, on the inner side of the point at which the inferior thyroid and vertebral arteries are given off. The ligature should not be applied between the origin of these vessels and the scalenus, inasmuch as the space is so small, that in consequence of the proximity of the ligature to the collateral arteries, a coagulum could not form to obliterate the trunk of the vessel.

5. *Ligature of the innominata.*—Allan Burns suggested the practicability of securing this vessel in the living subject, and the operation was actually performed by Professor Mott, of New York, in 1818, and subsequently by Professor Graefe, of Berlin, in 1822. The first case survived twenty-six days, and the last sixty-seven days. More recently, the operation has been performed by Professor Hall, of Baltimore, but in consequence of the enlarged and diseased condition of the vessel, and its intimate adhesions with the surrounding parts, in attempting to isolate it, so as to pass the ligature, its coats gave way, and a profuse hæmorrhage took place, and as no time was to be lost, a bold attempt was made to pass the ligature by means of Wiesse's needle, but the bleeding still continuing, the wound was filled with sponges, which commanded the flow of blood, and the patient was put to bed. Though much exhausted, reäction took place, and he survived until the fifth day.

As Professur Mott's method of performing the operation is well known, we shall only describe that of Graefe. The patient being placed as in the operation on the carotid artery, he commenced an incision upon the tracheal margin of the sterno-mastoid muscle, about half an inch above the sternum. This was carried upwards to a sufficient extent, as in the operation for exposing the carotid. With the index finger of the left hand, passed between the sterno-mastoid and the sterno-hyoid muscles, the soft parts surrounding the vessel were separated a little above the sternum, and the ligature was passed under the vessel, by means of an instrument similar to that of Deschamps, and tied about an inch above the arch of the aorta.

Mr. King, of London, recommends that the incision should be com-

menced immediately above the jugulum sterni, about fifteen or eighteen lines from the inner border of the sterno-mastoid muscle. This is to be carried through the skin and platysma myoides, and upon the line of division between the two sterno-thyroid muscles, and finally through the profound cervical fascia. The artery may then be easily exposed between the sterno-thyroid muscle and the trachea. This operation, which was, we believe, first suggested by Mr. King, in 1828, had already been recommended by Professor G. M'Clellan, of Philadelphia, in 1820.* Bujalsky recommends, that after having made the first incision as practised by Graefe, the sterno-hyoid and sterno-thyroid muscles should be cut across, immediately above the sternum, with a view of facilitating the application of the ligature. Band. 2, p. 82.

We have selected these examples from many others, because the vessels are large at the points designated, and the operations instituted for securing them attended with considerable difficulty. We have entered but few comments, because the author has generally laid down the various plans generally recommended by the most distinguished surgeons, and if he has in some cases omitted to enumerate some operative procedures to which we would give the preference, we do not consider the omission very important, as those which he has recommended are generally judicious.

Having advanced thus far, it is time we should bring our remarks to a close. It will be seen that we have noticed but a few of the topics comprised in the five volumes before us. Indeed, we have not extended our analysis beyond the second, and even within that space, we have been obliged to pass over many articles that deserved to be noticed. We have said enough, however, to enable our readers to form some idea of the character of the work, with which we need scarcely say, we have been, ourselves, much gratified. There is, indeed, something peculiarly grateful in the examination of German works of merit devoted to medical science. Critically and profoundly conversant with the subjects of which they treat, their authors never fail to award due credit to others. There is perhaps no people on earth so extensively read as the Germans, and assuredly none so ready to acknowledge the labours of their brethren both at home and abroad. They are constantly referred to, whether contained in the obscurest journals, or the most elaborate treatises, and always with candour and liberality. In conclusion, we will merely observe, that we consider the present work highly creditable to the German medical literature, and its execution honourable to its distinguished authors.

E. G.

* See Medical Recorder, of 1820.